

## Webster City Middle School: Iowa School Rebuilds with Energy Efficiency in Mind

*EnergySmart School Close-Ups highlight schools and school districts that have found ways to use energy more wisely, lowering their energy bills and raising awareness of energy issues.*

- ☐ Improving Existing Buildings
- ☒ Financing Building Improvements
- ☐ Operating and Maintaining Buildings
- ☒ Designing New Buildings
- ☐ Teaching and Learning
- ☐ Using Renewable Energy Technologies
- ☐ Using Alternatively Fueled School Buses

### Starting from scratch

Facing the fact that their school was outdated and over-crowded, Webster City Middle School administrators began to weigh their options for the future. The original school building was just 45,000 square feet., while the district estimated a need for an 80,000 square foot facility. Such an expansion would either involve extensive renovations or construction of a new facility. When these options were posed to the community, they voted to finance the development of a brand new middle school that could support the educational programming they desired for the community's children.



*Webster City Middle School's Pathways Lab*

### Building off past Rebuild America relationships

Webster City is no stranger to Rebuild America. In 1997, the Department of Natural Resources, the Webster City Municipal Utility, and The Energy Group collaborated to create the Rebuild Webster City partnership. The partnership was so successful in demonstrating commitment, innovation, and dedication to community and economic sustainability that it won Rebuild America's Energy Champion Partnership of the Year award in 1998. The Webster City Middle School project was inspired by the proven success of the community partnership as a whole.





## PROFILE:

### Location:

Webster City, Iowa

### District size:

575 Students

80,831 square feet

### Energy project scope:

New construction with geothermal heating system and energy management system

### Date constructed:

1997

### Energy saved:

Over 2,900 mmBtu's annually

### Dollars saved:

\$38,000 annually

### Project funding:

District Funding, Iowa Energy Bank Low-Interest Loan, and Utility Rebate

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## Tapping different funding streams

While the long-term financial benefits of energy efficiency are proven, the initial investment in the special technologies can be a challenge for schools to finance. In order to include energy-efficient elements in the new building, Webster City received support from the Iowa Energy Bank in the form of a \$150,000 low-interest loan, and from the Webster City Municipal Utility through a rebate of \$60,000.

## Geothermal heating and energy management systems

In an effort to integrate state-of-the-art renewable energy technology in the new building design, Webster City moved away from the traditional hot water heating of the original building, and instead designed the new school to take advantage of ground source heat pumps in a geothermal heating system.

Geothermal heating significantly reduces energy consumption in the heating process, and with that savings, schools can finance air conditioning systems. Webster City also installed an energy management system to maximize the heating, ventilation, and cooling system as a whole—saving energy and money wherever possible.



*Webster City Middle School*

## Increasing square footage and saving energy costs

The new 80,000 square foot facility boasts 75 percent more floor space than the original building, as well as air conditioning throughout. The average annual cost of energy in the old building was approximately \$0.89 per square foot. The new facility has approximately 35,000 more square feet and, even with air conditioning, has an annual cost per square foot of about \$0.41. This reduction in energy cost amounted to a savings (cost avoidance) of over \$38,000 annually or a payback of 6.5 years. In true cost the larger facility is operating at the same cost as the old, smaller space, but is air conditioned.

## Spreading success throughout the district

The lighting retrofits completed at Webster City Middle School were so successful that they inspired other school facilities throughout the district to do the same. The Iowa Energy Bank assisted with the funding of this \$90,000 district project that resulted in \$11,500 in annual savings, or a simple payback of 7.6 years. In addition to district-wide lighting improvements, operation and maintenance changes provided a savings of over \$23,000 annually on service contracts.



The EnergySmart Schools campaign is operated by Rebuild America, through the U.S. Department of Energy's Office of Building Technology, State and Community Programs.



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Or call the Energy Efficiency and  
Renewable Energy Clearinghouse (EREC)  
at: 1-800-DOE-3732

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